UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,342	01/11/2002	Beng S. Ong	D/A1333	6897

7590 01/26/2005

Patent Documentation Center
Xerox Corporation
Xerox Square 20th Floor
100 Clinton Ave. S.
Rochester, NY 14644

EXAMINER	
KIELIN, ERIK J	

ART UNIT	PAPER NUMBER
2813	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/042,342	ONG ET AL.	
	Examiner	Art Unit	
	Erik Kielin	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-37* is/are pending in the application.

4a) Of the above claim(s) *none* is/are withdrawn from consideration.

5)☒ Claim(s) *16-37* is/are allowed.

6)☒ Claim(s) *6-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action responds to the Amendment filed 30 November 2004.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 6-8, 13, and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,429,040 B1 (**Bao** et al.).

Regarding claim 6, **Bao** discloses a thin film transistor device comprised of a substrate **10**, a gate electrode **10**, a gate dielectric layer **12**, a source electrode and a drain electrode **13**, **15**, and a semiconductor layer **14**, (Fig. 1, col. 6, lines 14-41) comprised of a polythiophene derived from a monomer segment or monomer segments containing two 2,5-thienylene segments, (I) (called "A" in Bao) and a divalent linkage D (called "B" in Bao at paragraph bridging cols. 3-4), wherein A (called "R^1" in Bao) is a side chain; and wherein the number of A-substituted thienylene units (I) in the monomer segments is from about 0 to 999, the number of divalent linkages D may be 1, and **the number of B-substituted thienylene units (II) is 0,** which is "about 1," as presently claimed, wherein said polythiophene inherently overlaps M_n of from about 2,000 to about 100,000 because the number of monomer thiophene segments is from 4 to 1000 (col. 4, lines 2-3; compare to the instant specification page 10). (See Bao, Fig. 1, paragraph

bridging cols. 3-4; col. 6, lines 14-64.) Because the **Bao** ranges overlap those instantly claimed, the ranges are anticipated (See MPEP 2131.03.)

NOTE: Given that a monomer is a molecule and cannot exist as a portion of a molecule and still be that monomer, the claim terminology "about 1" indicates a range around one which would necessarily then include zero. This same problem exists with reference to the number of A-substituted thienylene units because the number indicates "about 1" which then may include zero.

Regarding claims 7 and 8, the side chain A (called "R^{2}" in Bao) may have 1 to 30 carbons and D may be arylene (called "aromatic" in Bao) from 6 to 40 carbons since R^{1} may be aromatic and aromatic groups such as phenyl groups have 6 carbon atoms and the thienylene portion of D has 4 carbons which makes 10 carbons, for example. B is moot since no B-substituted thienylene units are required. The source electrode and the gate dielectric are in contact with the semiconductor layer. (See Bao, col. 3, lines 38-67).

Regarding claims 13 and 14, **Bao** discloses jet printing of the polythiophene is known (paragraph bridging cols. 1-2). Note however that method limitations do not have patentable weight in device claims. **Bao** discloses that said source/drain electrodes and said gate dielectric layer are in contact with said semiconductive layer (Fig. 1; paragraph bridging cols. 3-4).

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi* et al, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is

the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law make clear.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bao**.

The prior art of **Bao**, as explained above, discloses each of the claimed features except for indicating that the arylene is phenylene. Phenylene is the simplest 6-carbon aromatic and is obvious over the **Bao** suggestion that R^1 be aromatic.

It would have been obvious for one of ordinary skill in the art, at the time of the invention to make the aromatic R^1 group of **Bao** be phenylene because it is the simplest and least expensive of the aromatic groups.

5. Claims 11, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bao** in view of US Patent Application 2002/0053320 A1 (**Duthaler** et al.).

The prior art of **Bao**, as explained above, discloses each of the claimed features except for the materials of the substrate and the gate, source, and drain electrodes and the gate dielectric.

Duthaler teaches common materials for forming a TFT having a polythiophene semiconductor layer (paragraph [0038]) include (1) for the substrate are plastics such as polyimide, polyester and polycarbonate, as well as glass and silicon (paragraph [0035]), and (2) for the gate, source, and drain electrodes, gold, nickel (paragraph [0036]) , and conductive ink (paragraph [0061]), and (3) for the gate dielectric silicon dioxide, silicon nitride, and insulating polymers such as polyimide (paragraph [0037]). This is all of the material limitations in claims 11, 12, and 15.

It would have been obvious for one of ordinary skill in the art, at the time of the invention to use the transistor materials of **Duthaler** as the transistor materials in **Bao** in order to facilitate construction of the transistor as taught in **Duthaler**.

Allowable Subject Matter

6. Claims 16-37 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach or suggest, in combination with the other claimed limitations, the specifically claimed formula (III) having a number average molecular weight in the range of 4,000 to 50,000, used specifically as the semiconductor layer in a thin film transistor.

Response to Arguments

8. Applicant's arguments filed 30 November 2004 have been fully considered but they are not persuasive.

9. Applicant arguments are premised upon an unclaimed feature: that the claims require "at least one B-substituted thienylene unit (II)." Given that a monomer is a molecule and cannot exist as a portion of a molecule and still be that monomer, the claim terminology "about 1" indicates a range around one which would necessarily then include zero. This same problem exists with reference to the number of A-substituted thienylene units because the number indicates "about 1" which then may include zero. In this regard, although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

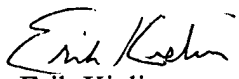
10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 571-272-1693. The examiner can normally be reached on 9:00 - 19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Erik Kielin
Primary Examiner
January 21, 2005